

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization International Bureau



(43) International Publication Date
5 February 2004 (05.02.2004)

PCT

(10) International Publication Number
WO 2004/012469 A1

- | | | |
|---|--|---|
| (51) International Patent Classification ⁷ : | H04Q 7/22 | (IT). QUARANTA, Isidoro [IT/IT]; Via Villanova, Lotto 1, sc. B, I-84014 Nocera Inferiore (IT). |
| (21) International Application Number: | PCT/EP2003/007979 | (74) Agent: TONSCHEIDT, Andreas; Ericsson Eurolab Deutschland GmbH, Ericsson Allee 1, 52134 Herzogenrath (DE). |
| (22) International Filing Date: | 22 July 2003 (22.07.2003) | (81) Designated States (<i>national</i>): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW. |
| (25) Filing Language: | English | |
| (26) Publication Language: | English | |
| (30) Priority Data: | 02425487.2 25 July 2002 (25.07.2002) EP | (84) Designated States (<i>regional</i>): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG). |
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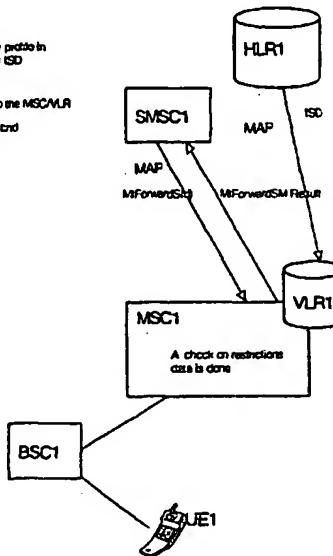
[Continued on next page]

(54) Title: METHOD FOR RESTRICTING THE TRANSMISSION OF SHORT MESSAGES

Most relevant steps for "SMS Reception Restriction" (1st alt.)

1. Restriction information are stored in the subscriber profile in VLR by using Location Updating or restore data or ISD Stand Alone
2. SMSC sends the MAP operation MTForwardSM to the MSC/VLR
3. MSC/VLR do a check against the restriction data and decide if submit the SMS to MS or reject it

MT SM procedure using the implementation in MSC/VLR



WO 2004/012469 A1

(57) Abstract: The invention relates to a method for handling short messages in a mobile services switching center. The invention enables to restrict the reception of short messages by entering restriction information. Said restriction information is stored in a network for mobile telecommunications. At the reception of a short message at a mobile services switching centre it is checked whether a parameter describing the short messages matches with restriction information. If so the short message is rejected, if not it is handled forwarded to the receiver.

**Declaration under Rule 4.17:**

- *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZM, ZW, ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR,*

GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)

Published:

- *with international search report*
- *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

Method for restricting the transmission of short messages

Technical field of the invention

The invention relates to a method for restricting the transmission of short messages in a core network node.

5 Description of related art

Short message service is well known and increasing in number of participants and traffic. It enables to send a short text from a sender to a receiver via a cellular telecommunication network like a GSM (Global System for Mobile telecommunications) or UMTS (Universal Mobile Telecommunications System). A further development is the 10 multimedia messaging service that enables the sending of pictures, text and audio messages. However, an increasing number of short messages and multimedia messages is used for advertisements or the distribution of so called short message viruses. A further problem is the reception of fraudulent "call me back" messages sent by operators of telephone service providers like 0190-services in Germany. Although call barring even 15 for incoming calls is a well-established feature within cellular telecommunications networks, there is currently no means to avoid the reception of short messages available. It is therefore object of the invention to provide means for restricting the transmission of short messages and multimedia messages.

Summary

- 20 In the following the term short messages is used as a synonym for messages transmitted by using a short message service or a multi media message service. The invention introduces a method for handling short messages in a core network node of a communication network supporting a short message service and a mobile services switching centre for said communication network executing said method.
- 25 The method for handling short messages in a core network node of a communication network supporting a short message service, comprises the steps of receiving a short message, identifying the receiver of the short message, retrieving information about a restriction for the transmission of short messages for the user, comparing information

about the short message with retrieved information, and deciding based on the result of the comparison whether to forward the short message to the receiver or to reject the short message. The execution of the invented method in a core network node saves resource on the air interface. If the handling of restrictions would be executed in a user equipment for 5 mobile telecommunication, signalling and data transmission resources would be required.

The core network node may be for instance a mobile services switching centre. This has the advantage that no new node has to be introduced for the handling.

- Information about a restriction is retrieved from a visited location register, or a service control function for example. As restriction information in most cases is related to an end 10 user and visited location register are already used for storing a user profile, the invention can be implemented with minor effort. Furthermore interfaces between a mobile services switching centre and a visited location register and respectively a service control function are already defined. By this, existing interfaces can be used for the implementation of the invention. This solution consists in following main steps, restriction data is stored in an 15 home location register in the subscriber profile by the operator, the subscriber profile (together with Restriction data) is downloaded in visited location register during Update Location, Restoration Data procedure or whenever the subscriber profile change. A check on originating address is done in mobile services switching centre /visited location register, if a restriction is found, the SMS is not sent to the MS.
- 20 The downloading from home location register to visited location register of restriction information can be implemented either as proprietary solution using the extension container of Insert Subscriber Data MAP (Mobile Application Part) message or as standard solution adding new parameters in ISD MAP message.

A mobile services switching centre according to the invention comprises a short message 25 restriction module for retrieving restriction information, for comparing information available about the short message with restriction information and for deciding whether to forward a short message to a receiver or to reject the short message.

Brief description of the figures

Figure 1 depicts a first embodiment of the invention.

Figure 2 depicts a further embodiment of the invention.

Detailed description of the invention

In the following the invention will be described by means of figures and embodiments.

- 5 Figure 1 depicts a first embodiment of the invention. A simplified core network supporting a short message service is depicted, comprising a home location register HLR1, a mobile services switching centre MSC1, a visited location register VLR1, a base station controller BSC1, a user equipment UE1 and a short message service centre SMSC1. The home location register HLR1 is connected to the visited location register
- 10 VLR1 and transmits in a first step 100 restriction information to the visited location register VLR1. The visited location register VLR1 stores said restriction information for example in the subscriber profile. Restriction information can comprise for example the following parameters describing an short message, a subject or title of a message, a type of message, a size, an origin, a service, an identification of at least one of the following:
- 15 a subscriber, a group of senders, or a server. If at least one of the parameters of a short message matches with at least one of the stored parameters, it will not be forwarded.

The short message service centre SMSC1 requests the mobile services switching centre MSC1 in a next step 101 to forward a short message to a subscriber, for example by sending a mobile application part MtForwardSM message.

- 20 In a following step 102 the mobile services switching centre MSC1 demands restriction data for the addressed subscriber from the visited location register VLR1. The visited location register VLR1 returns the demanded restriction information in a next step 103. The mobile services switching centre MSC1 checks, whether there is a match between a parameter describing the short message and a parameter of the restriction information in a next step 104. If there is a match, the mobile services switching centre MSC1 rejects the short message and informs the short message service centre SMSC1 in a next step 105 about the rejection, for example by sending a MtForwardResult message. If there is no match, the mobile services switching centre MSC1 forwards the short message to the
- 25

addressed subscriber and informs the short message centre SMSC1 about it. This can be executed for example by sending a MtForwardResult message.

- Figure 2 depicts an alternative embodiment of the invention. A simplified core network supporting a short message service is depicted, comprising a mobile services switching centre MSC2, a service switching function gsmSSF, a service control function gsmSCF, a visited location register VLR2, a base station controller BSC2, a user equipment UE2 and a short message service centre SMSC2. In the depicted embodiment of the invention, it is necessary that the user equipment UE2 comprises a Mobile originating/ mobile terminating-short message service-CSI (Customised application mobile for enhanced logic Service Indication), and that the feature SMS (Short Message Service) Camel (Customised Application Mobile for Enhanced Logic) Phase 4 or another IN (Intelligent Network) triggering solution for SMS is supported in the mobile services switching centre/visited location register MSC2/VLR2 serving the area, where the user equipment UE2 is currently roaming.
- In a first step 201, the short message service centre SMSC2 requests, for example by sending a MAP (Mobile Application Part) message MtForwardSM, the mobile services switching centre MSC2 to forward a short message. In a next step 202, the mobile services switching centre MSC2 requests an intelligent network node, the GSM (Global System for Mobile telecommunications) service control function gsmSCF, through the GSM service switching function gsmSSF, to check, whether restriction information is stored related to the user equipment or its user. The request can be performed for example by sending a CAP (CAMEL Application Part) message InitialDPSMS. If the GSM service control function gsmSCF finds matching restriction information, it indicates that the short message shall not be sent to the mobile services switching centre MSC2, for example by sending a CAP ReleaseSMS message. If the GSM service control function gsmSCF does not find any matching restriction information, it indicates this to the mobile services switching centre MSC2 for instance by sending a CAP ContinueSMS/ConnectSMS message. The mobile services switching centre MSC2 then forwards the short message towards the user equipment UE2. In both cases, forwarding and rejection of the short message, the respective result is sent in a step 204 to the short

message service centre SMSC2. This can be performed by sending a MAP MtForwardSMResult message.

- The features of the embodiment as described by means of figure 2 can be implemented as a proprietary solution or as a standard solution. In the case that a proprietary solution
- 5 chosen, it is possible to reuse a generic rpCause in the Release message sent on the CAP interface as showed in the Fig. 2. In the case that a standardised solution is chosen, the 3GPP (3rd Generation Partnership Project) technical specifications TS 23.040 Technical realization of the Short Message Service (SMS), TS 29.078 CAMEL Application Part (CAP) specification, and TS 23.078 Customized Applications Mobile Enhanced Logic –
- 10 Stage 2 have to be adapted. It is for example necessary to add an rpCause in the above mentioned release message.

Claims

1. Method for handling messages in a core network node of a communication network supporting a service for transmitting said message, wherein the message is a short message or a multi media message, and wherein the method comprises the steps of:
 - 5 - receiving a message,
 - identifying the receiver of the message,
 - retrieving information about a restriction for the transmission of messages for the user,
 - comparing information about the short message with retrieved information, and
 - 10 - deciding based on the result of the comparison whether to forward the message to the receiver or to reject the message.
2. Method according to claim 1, wherein the core network node is a mobile services switching centre.
3. Method according to claim 1 or 2, wherein the information about a restriction is
15 retrieved from a visited location register.
4. Method according to claim 1 or 2, wherein the information about a restriction is retrieved from a service control function.
5. Mobile services switching centre characterised by a message restriction module for retrieving restriction information, for comparing information available about the message with restriction information and for deciding whether to forward a message
20 to a receiver or to reject the message.

Most relevant steps for "SMS Reception Restriction" (1st alt.)

1. Restriction information are stored in the subscriber profile in VLR by using Location Updating or restore data or ISD Stand Alone
2. SMSC sends the MAP operation MTForwardSM to the MSC/VLR
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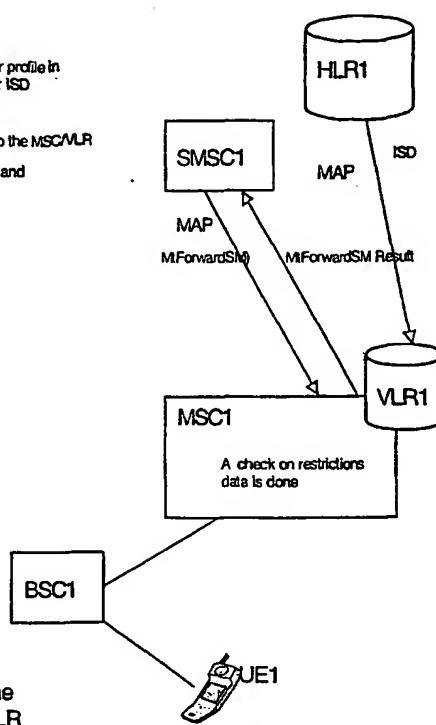


Fig. 1 – MT SM procedure using the implementation in MSC/VLR

Most relevant steps for "SMS Reception Restriction" (2nd alt.)

1. SMSC sends the MAP operation MTForwardSM to the MSC/VLR
2. MSC/VLR (gsmSSF) contacts Camel to get instruction on how continuing the delivery
3. Camel authorizes the delivery of MT SMS if no restriction is found during the check against the restriction information
4. If the check fail a release message is sent back to gsmSSF with a particular rpCause as in design base.
5. If the check is successful the MT SM is delivered as in design base

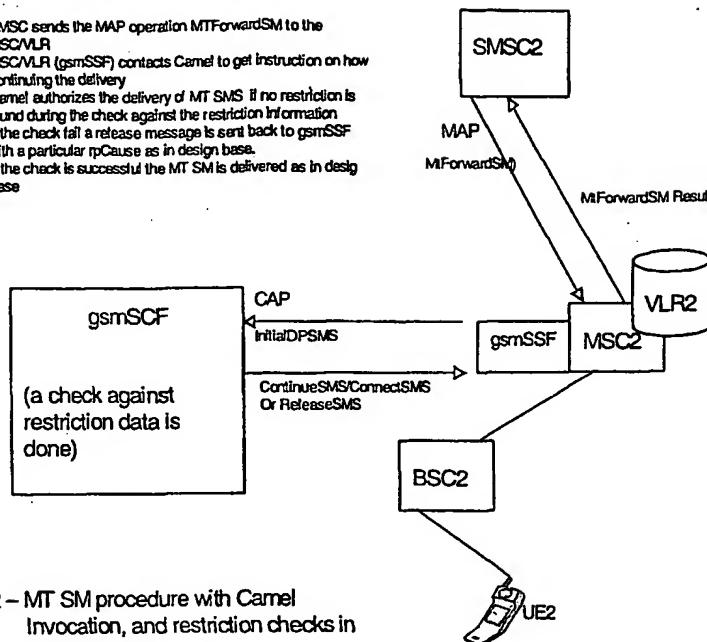


Fig. 2 – MT SM procedure with Camel Invocation, and restriction checks in gsmSCF node

INTERNATIONAL SEARCH REPORT

Internal	Application No
PCT/EP 03/07979	

A. CLASSIFICATION OF SUBJECT MATTER IPC 7 H04Q7/22

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols) IPC 7 H04Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
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C. DOCUMENTS CONSIDERED TO BE RELEVANT
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X	WO 01 91487 A (KAMIYAMA HIROYUKI ;MAAS FEDOR (JP); WANAMI ATSUSHI (JP); ERICSSON) 29 November 2001 (2001-11-29) page 3, line 20 -page 4, line 22 page 7, line 7 -page 9, line 12 abstract; figures 2,3 --	1,2,4,5
X	WO 01 05118 A (NOKIA NETWORKS OY ;OHMAN ISMO (FI); MOLNAR VALERIA (HU)) 18 January 2001 (2001-01-18) page 2, line 30 -page 4, line 33 page 7, line 22 -page 9, line 20 claims 1,3,6-8,10,12; figures 1-3 --	1-3,5
A	----- claims 1,3,6-8,10,12; figures 1-3 --	4
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Date of the actual completion of the International search

21 November 2003

Date of mailing of the International search report
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02/12/2003

Name and mailing address of the ISA

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Application No

PCT/EP 03/07979

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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INTERNATIONAL SEARCH REPORT

Information on patent family members

Internat:	Application No
PCT/EP	03/07979

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